

Privatization and Regulation of Transport Infrastructure in the 1990s

Successes . . . and Bugs to Fix for the Next Millennium

Antonio Estache

Learning to regulate fairly, effectively, and at arm's length may be the main challenge governments face in attracting private investment and financing to the transport sector.



Summary findings

Governments should increasingly be able to rely on the private sector for help supporting (and financing) the transport sector — especially infrastructure support services for which there is heavy demand — but first they must improve their regulatory tools and sort out the institutional mess surrounding the regulatory process. Some countries have put together creative restructuring models and financing designs that tap potential in the private sector.

Roads will continue to need significant public funding, but there are innovative ways (including shadow tolls) to attract private financing for road maintenance and investment.

Partnerships between the public and private sectors have remained largely untapped at ports and airports.

To attract more private capital to the sector, regulators must know the cost of capital, know how to be fair to captive shippers, and have a better handle on demand — so they have more credibility when conflicts arise.

Governments have overemphasized making deals and have generally underestimated the difficulty of taking on their new job as regulators. They are increasingly switching to contract-based regulation, to firm up the commitments of all parties involved, but are not

adequately emphasizing contract design that anticipates problems and addresses unpredictable situations. This increases the risk of arbitrary regulatory rulings, which increases regulatory and political risks, which raises the expected rate of return required by potential investors. And all that makes future projects costlier or more difficult, adding to the effects of the 1998–99 financial crisis.

As a result of increased risk, the two groups most interested in the sector are:

- Large, strong operators in the sector — typically in tandem with local construction companies — that feel confident they can take on regulators in case of conflict.
- Risk-takers carving a niche for themselves.

Either way, taxpayers and transport users are exposed to government, regulator, or operator failures that result in contract renegotiations (the norm, rather than the exception, in transport infrastructure projects).

Gains from privatization might not reach consumers, simply because governments are ignoring the importance of ensuring fair distribution of long-run gains through the early creation of independent and accountable regulatory institutions that work closely with effective competition agencies.

This paper — a product of Governance, Regulation, and Finance, World Bank Institute — is part of a larger effort in the institute to increase understanding of infrastructure regulation. Copies of the paper are available free from the World Bank, 1818 H Street, NW, Washington, DC 20433. Please contact Gabriela Chenet-Smith, room J3-282, telephone 202-473-6370, fax 202-334-8350, email address gchenet@worldbank.org. Policy Research Working Papers are also posted on the Web at www.worldbank.org/research/workingpapers. The author may be contacted at aestache@worldbank.org. November 1999. (36 pages)

The Policy Research Working Paper Series disseminates the findings of work in progress to encourage the exchange of ideas about development issues. An objective of the series is to get the findings out quickly, even if the presentations are less than fully polished. The papers carry the names of the authors and should be cited accordingly. The findings, interpretations, and conclusions expressed in this paper are entirely those of the authors. They do not necessarily represent the view of the World Bank, its Executive Directors, or the countries they represent.

**PRIVATIZATION AND REGULATION OF TRANSPORT INFRASTRUCTURE IN THE 1990S:
SUCSESSES... AND BUGS TO FIX FOR THE NEXT MILLENNIUM**

ANTONIO ESTACHE

PRIVATIZATION AND REGULATION OF TRANSPORT INFRASTRUCTURE IN THE 1990s: SUCCESES... AND BUGS TO FIX FOR THE NEXT MILLENNIUM

ANTONIO ESTACHE¹
(The World Bank)

1. Introduction

The 1990s have seen a dramatic increase in the liberalization of transport policies, thus strengthening the return of private operators and investors in transport infrastructure in the world, as already noted by Gomez-Ibanez and Meyer (1993) for the 1980s.² As with many economic changes with a strong market orientation, the process started in the U.S. In the 1980s, Presidents Reagan and Bush continued a deregulation process initiated in the late 1970s by the Democratic administration (air in 1978, rail and trucking in 1980). The move was soon followed by the U.K. and also in Latin America and in to a large extent in East Asia. In these countries, changes in ideology about the role of the state and unhappiness with the quality of service provided by public monopolies played a clear role in stimulating the return of private transport operators. However, the main driving force for many developing countries has generally been some type of fiscal crisis. The need to cut public expenditures forced pragmatic governments to turn to the private sector for assistance in financing the tremendous investment requirements in infrastructure—equivalent, on average, to 4-6 percent of GDP/year in developing countries for the foreseeable future--freeing up shrinking public resources to finance deficits, service debts and, in principle, under-funded

¹ I would like to thank J. Campos, J. Carbajo, G. de Rus, N. De Castro, J.A. Gomez-Ibanez, K. Gwilliam, M. Juhel, J.J. Laffont, G. Nombela, O. Betancour, John Strong, L. Thompson and L. Trujillo for many suggestions and/or discussions on many of the issues covered in this paper. The findings, interpretations, and conclusions expressed in the paper are, however, entirely mine. They do not necessarily represent the view of the World Bank, its Executive Directors, or the countries they represent.

² Many casual observers do not know that this is indeed a return of the private sector 50 years after the nationalization of the private monopolies that had created the first railways, bus companies, and even some major airports, ports and roads, in developing countries in particular. The nationalization took place in most Western countries in between the two World Wars as part of the larger role of government decided as a result of the economic depression of the 1930s and with the increase in the number of socialist administrations in many European countries. In developing countries, it took place a bit later as one of the high profile actions viewed by the new independent governments as necessary to end their status as colonies.

activities such as education and health, although there is no strong evidence that this actually took place.

The necessity of increased private sector involvement in transport infrastructure does not mean that the role of the public sector is over. It will continue to have to finance many projects too risky to attract private investment at viable rates of return. It will also continue to have to define policies and strategies for the sector. The main change is that it must replace its previous role as a self-regulated provider of services with that of a new role as an independent regulator of the significant number of activities delivered by private operators. This new role is important because not every transport activity is competitive. In fact, transport restructuring often creates local monopolies or oligopolies in transport infrastructures. Moreover, even when competition can work because entry is feasible and desirable, public regulation of safety or service quality is often needed to ensure that operators do not cut costs through these quality variables. The international experience of the 1990s suggests that while the transfer of operations from public to private hands is reasonably smooth on average, the transition of the public sector from self regulated operator to independent regulator of private monopolies and other market failures is proving to be much more challenging than anticipated. This changed governmental role still requires significant adjustments in many countries ensure that the expected efficiency and financing payoffs of private sector participation can be sustained.

This paper takes stock of the main achievements and highlights the major challenges that governments are likely to face in taking on their new role in this sector. It is organized as follows: Section 2 gives a snapshot of the main transactions resulting in increased private participation in transport during the 1990s;. Section 3 advances impressions about the impact of the 1998-1999 financial crisis in emerging economies on the prospects for future private participation in transport;

Section 4 provides some evidence on the forms of private sector participation that results from restructuring across regions; Section 5 presents the ways in which competition has been introduced in transport; Section 6 discusses the new role for government and identifies the main challenges that will have to be addressed soon to ensure that the gains achieved through additional private involvement are more than just additional investments and that all users share in the long-run benefits; Section 7 provides some concluding thoughts.

2. Global Trends in Private Participation in Transport Infrastructure

A useful, even quite imperfect, indicator of the outcome of the deregulation wave over the last fifteen years is the number of new transport infrastructure projects considered by the private sector.³ Between 1985 and October 1998, Public Works Financing estimated that 1,004 new transport projects worth U.S.\$580 billion were planned and/or financed around the world.⁴ Of those, about half were toll roads, a quarter were rail projects, and the rest were airport and port projects. An interesting detail is that less than 25 percent of these projects were under construction at the end of 1998, suggesting that while deregulation can generate enthusiasm, it does not guarantee disbursement by the private sector. A more detailed look at the differences between developed and developing economies can provide useful insights.

2.1. Developed Economies

Table 1 shows that developed countries generated only about 25 percent of the newly-planned privatization projects over the last fifteen years. The amounts involved are significant in

³ Clearly this is an imperfect indicator since the emergence of transport projects has a great deal to do with developments in the capital markets, especially local markets. It is not clear what share of investment is stimulated by privatization rather than by deregulation. Moreover, the strict comparison of numbers across sectors has to be quite cautious since in some sectors such as roads the count of projects will tend to be much higher than in others such as railways for obvious reasons.

terms of value, representing about 40 percent of the total value of planned projects for the world. This suggests that the average project size in developed countries is much larger than in developing countries, where 75 percent of the world's planned projects take place with only 60 percent of the world's total dollar amount.

Table 1. Projects Planned in Developed Countries										
	Toll Roads		Rail Projects		Airports		Seaports		Total	
	No.	US\$ millions	No.	US\$ millions	No.	US\$ millions	No.	US\$ millions	No.	US\$ millions
North America	37	11,783	15	30,791	27	4,821	3	1,315	82	48,710
USA	27	8,839	13	23,091	24	3,071	3	1315	67	36,316
Canada	10	2,744	2	7,700	3	1,750	0	0	15	12194
Western Europe	69	8,922	65	74,878	13	13,406	3	111	150	97,317
Belgium	1	430	0	0	0	0	0	0	1	430
Denmark	1	1,890	2	805		0	0	0	3	2,695
Finland	1	255	0	0	0	0	0	0	1	255
France	4	8,121	3	2,430	0	0	0	0	7	10,551
Germany	5	5,888	3	5,597	2	4,707	0	0	10	16,192
Greece	5	7,254	2	715	3	3,328	0	0	10	11,297
Iceland	1	70	0	0	0	0	0	0	1	70
Ireland	2	52	1	70	1	170	0	0	4	292
Italy	0	0	3	18,000	0	0	0	0	3	18,000
Netherlands	0	0	0	0	1	1,600	0	0	1	1,600
Portugal	9	5,303	3	3,129	1	2,000	0	0	13	10,432
Spain	17	7,778	3	5,151	0	0	2	64	22	13,010
Sweden	0	0	1	590	0	0	0	0	1	590
Switzerland	0	0	1	12,500	0	0	0	0	1	12,500
U.K.	23	21,881	43	25,891	5	1,601	1	47	69	49,419
Asia	15	20,001	16	3,648	14	33,079	2	42	47	56,770
Australia	14	5,601	15	3,494	11	4,463	2	42	42	13600
Japan	1	14,400	0	0	2	28,400	0	0	3	42,800
New Zealand	0	0	1	154	1	216	0	0	2	370
Total	121	90,506	96	110,218	54	51,106	8	1,468	279	163,609

Source: Public Works Financing (1998)

Table 1 also shows that the pioneering actions of the U.S. found followers not only in the U.K.—in fact, the most active project generator— but also in Australia where national as well as sub-national deregulation has resulted in a large number of new private initiatives. In Europe, deregulation in most Anglo-Saxon, Nordic and Southern European countries has generated many new private projects in rail and roads. The rest of continental Europe is preparing to follow, under

⁵ The EEC liberalization efforts in transport services started in 1986 with the decision to have an “interior” space with free circulation of goods and services. Progress was slow but by 1998, air transport and freight transport by road had been fully liberalized. Much less progress has been achieved in railways despite discussions that began as early as 1991 with the request of the accounting separation of the infrastructure and other businesses. Since then most of the progress has been on the definition of access rules. Another major achievement has been the harmonization of many technical norms.

the stimulus of an EEC push to liberalize the sector.⁶ From a sub-sectoral viewpoint, it is clear that toll roads and rail projects attract the most attention, while older ports do not seem to need many new investments in developed countries. Airport projects are mainly concentrated in Australia, the U.K. and the U.S.

2.2. Developing Economies

Table 2 summarizes a database put together by the World Bank for developing countries. Its coverage is somewhat different from the Public Works database, with a focus on actual deals rather than planned projects. It covers all divestitures, concessions/franchises and operation and maintenance contracts signed in the developing world between 1990 and 1997, a period when most of the projects covered by the Public Works database took place in developing and transition economies.⁷ The values listed in the table show the actual investments the private sector has committed by contract to deliver. During this decade, private operators have committed themselves to invest about U.S.\$65 billion in transport infrastructure in the short to medium run—about 1 percent of the total GNP of developing countries.⁸

The table reflects the significant role that private sector participation can have in the transport sector when partnership with government is based on strong mutual commitments to joint work. This role is particularly important in areas and activities where demand is strong and therefore commercial risk is manageable. This is illustrated by the number of projects and the new

⁶ The EEC liberalization efforts in transport services started in 1986 with the decision to have an “interior” space with free circulation of goods and services. Progress was slow but by 1998, air transport and freight transport by road had been fully liberalized. Much less progress has been achieved in railways despite discussions that began as early as 1991 with the request of the accounting separation of the infrastructure and other businesses. Since then most of the progress has been on the definition of access rules. Another major achievement has been the harmonization of many technical norms.

⁷ The Asian crisis made the year 1998 a low in terms of project activity and new transactions in infrastructure throughout the world.

⁸ To put these numbers in perspective, it may be worth reminding the reader that the 1997 GNP for developing countries was about US\$6,000 billion, while the world GNP was about US\$30,000 billion. This suggests that private financing will continue to be a minor part of the investment requirements of the infrastructure as a whole, although it is concentrated in activities that meet the highest demand segments of the transport sector.

investment that transport reform, coupled with macroeconomic adjustments, brought to Latin America and East Asia between 1990 and 1997.⁹ Indeed, these two regions attracted almost 90 percent of all transactions and about 94 percent of all investment commitments. Both regions benefited from a tremendous boom in demand during the 1980s and many investors believed that they could do no wrong in regions that had apparently learned to manage their macroeconomic problems and were benefiting from ease borrowing terms allowed by top credit rating and excess supply of capital flows in the world.

Table 2: Number of Investments, Commitments and Disbursements in Transport Infrastructure in Developing and Transition Economies							
	AFRICA	EAST ASIA	EASTERN EUROPE	LATIN AMERICA	MIDDLE EAST	SOUTH ASIA	TOTAL
AIRPORT							
Number of transactions	3	5	5	11	0	1	25
Value in millions of \$	58.8	2,597.4	694.1	388.3	0	125	3863.6
PORT							
Number of transactions	3	36	3	36	5	7	90
Value in millions of \$	0	5,086.2	0	1,704.9	370.5	833.1	7,994.7
RAIL							
Number of transactions	3	7	1	26	0	0	37
Value in millions of \$	0	7,483.3	0	6,208.1	0	0	13,691.4
ROAD							
Number of transactions	5	102	2	93	0	6	208
Value in millions of \$	426	18,567	1,086	18,794.8	0	63.5	38,937.3
TOTAL							
Number of transactions	14	150	11	166	5	14	360
Value in millions of \$	484.8	33,733.9	1,780.1	27,096.1	370.5	1,021.6	64,487

Source: World Bank PPI database

The sectoral distribution is just as skewed toward rail and road deals as it is in developed countries because public rail services tend to be equally poor in both country groups. Cutting rail and road transport costs is a major concern which requires significant investment to rehabilitate and improve overall operational performance. It is becoming increasingly clear to governments that both efficient logistics and the opportunity for multimodal arrangements are essential to

⁹ With the macroeconomic problems of 1998, the project flows dried up.

¹⁰ With the macroeconomic problems of 1998, the project flows dried up.

competitiveness. This means improving rail service rather than relying on trucks for long distance freight transport. Similarly, congestion accessing large cities and between large cities is increasingly common throughout the world. The main difference between developing and developed countries is that emerging economies are also seeing significantly more activity in the port sector over the last year —again demonstrating the need to address high logistic costs.

The most perceivable outcome of these changes is that the private sector will be responsible for large shares of transport services. Over 30 percent of railway services are now under private operations around the world—in total km and passenger/km.¹¹ Operations and investment in airports and ports are increasingly in private hands in the OECD countries of Latin America and East Asia, with the U.S. being the exception. However, this is still a far cry from being a typical situation. Even in the roads sector, where public investments will continue to be needed for low traffic roads, toll roads are becoming increasingly important and are increasing shares of all traffic needs, such as in Argentina and some parts of Brazil. It is not too risky to predict that this trend is likely to continue as the demand for transport services continues to grow much faster than the government's ability to raise the resources to finance it. This is no longer the dogmatic debate comparing public vs. private providers that it may have been after the privatization wave introduced by the Thatcher administration in the U.K. For many countries it is now a matter of necessity, as governments can no longer afford to be the sole operator and financier of costly transport infrastructures.¹²

Most governments have recently come to similar conclusions after studying these early experiences. About 73 percent of these projects actually took place during the second half of the

¹¹ That figure is over 65 percent in Latin America.

¹² In addition to the long run fiscal gains achieved through a reducing the need to finance the sector's expansion, for many governments, in particular those in developing countries, "privatization" transaction is often designed to also generate revenue to address short to medium term fiscal needs.

period covered by the sample (between 1995 and 1997). In fact, about 45 percent of the investment commitments have been made since 1996, with about 30 percent in 1997 alone. This also shows that it takes time to work out the contracts that support the project ideas. It may also reflect the steep learning curve both government and private operators must travel to learn to work with each other in an uncertain world. And as the 1998 crisis showed, it is quite easy for the private sector to stop contract negotiations when the surrounding macroeconomic environment is not supportive enough.

3. Prospects for Private Participation in Transport After the 1998-99 Financial Crisis

It is difficult to review the experience of this decade and use it to draw conclusions for the future without considering the consequences of the recent developments in emerging financial markets, since these introduce conditions not reflected in the 1990-1997 data discussed above.¹³ These new conditions are likely to change the prospects of effective private financing of transport projects for the next two to three years. Large portfolio outflows in emerging market funds mean that the sources of international equity and debt capital that became available in the mid-1990s will for some time be sharply curtailed for all but the most creditworthy projects for some time. The crisis will also influence the demand for many of the transport services. Remember, transport is a “derived demand”: if growth slows, the transport sector does not do well either. This is in fact a much more serious problem since experience suggests that privatizing teams have tended to overestimate demand in the transport sector, probably more than in any other sector. What does this mean for the future?

The most obvious impact of financial tension in this sector is the increase in the risk level. Premiums for commercial (remember demand), regulatory (remember the institutional problems),

¹³ Consider also that any real economic effects from these financial events have particular consequences for the transport sector. Since transport is a derived demand, any decline in real economic activity will quickly be felt in traffic levels and revenues. These effects

political (as always, in uncertain times) and currency risks all have risen significantly in 1999. Damage also comes from added restrictions on financing options. First, the costs of debt finance have not only increased for most developing economies, but also for some of the developed economies in Asia. Transport projects that have significant commercial risk will face higher interest rates, with debt premiums for political, currency, regulatory and sectoral risk. Depending on the particular project, rates of LIBOR plus ten percent should not be unexpected in many developing countries. and this means that only the very best projects will find a market.

Moreover, higher levels of equity are likely to be required for many projects. In Brazil, for instance, projects that were being structured with as much as 70 percent debt, 30 percent equity in mid-1998 are now being discussed at a minimum of 50 percent debt, 50 percent equity. Also, rapid outflows from emerging market funds and developing infrastructure funds have reduced the ability of sponsors to tap them as equity sources. As a result, infrastructure projects are increasingly looking primarily to construction and engineering companies as sources of equity. The problem is that the incentive for these parties is to earn enough profit on the construction activity to justify the upfront equity investment required. When projects were being financed with 70 percent debt, sharing in the 30 percent equity component could be justified, especially when construction companies generally put in about half the equity. With up to 50 percent equity required, construction profits are not adequate to earn a minimally-required return. In fact, the higher required rates of return on debt mean that even if the old capital structure mix could be maintained, construction company equity holders will now require a much greater ongoing revenue stream to make such projects meet hurdle rates.

Second, the available maturity period of permanent debt instruments is likely to shorten for many borrowers. In countries without domestic long-term capital markets, many transport concessions use bridge financing until the construction period is completed. At that point,

vary by sector, especially over the medium to longer term. Particularly hard-hit should be toll roads and passenger air transport, which are extremely sensitive to income levels. This further reinforces the need to think of government involvement in the sector.

concessionaires look to convert to permanent financial structures. Stability concerns have tended to shorten many lenders' horizons to five years, compared to as much as ten years recently. This is a major problem for many infrastructure projects. Even with construction grace periods, many projects take three to five years to reach volumes that are self-supporting.

These problems suggest that, in addition to a new role as regulator, governments need to go back to more fully defining their new role in co-financing the sector. It is increasingly clear that governments will have to be closer partners with the private sector. Since the beginning of this new privatization wave they have been present through implicit or explicit guarantees, and often picked up the tab in the form of subsidies when risks became realities and additional financing was needed. But this need is now likely to be stronger and they must consider providing explicit and transparent government guarantees or contributing more to the equity of the projects. This is what the Brazilian development BNDES is doing by buying, on average, 21 percent of the shares in Brazil's privatization.

In Latin America, these actions can result in a fall of the risk premiums by two to four percent. While this may make the project more feasible, it would not provide the government with the required equity returns. The real value to government investment would be if it allowed for both a higher share of debt and a lower required-return on private equity. This does not appear to be the case in current capital market conditions. Rather, it serves to "buy down" project size to make it more attractive to private capital. As said at the beginning, this is the main purpose of the reforms to begin with!

4. Revealed Preferences for Forms of Private Sector Participation in Transport

The figures quoted so far are providing a somewhat excessively aggregated review of the privatization experience in the transport sector. As already mention, privatization is quite a borad concept that hides many forms of private participation. The review of the distribution of the forms of private participation across sectors and regions is the main purpose of this section.

There are four broad categories of contractual arrangements used to get the private sector involved in any sector:¹⁴

- *Divestiture*: this is the actual sale of public assets to the private sector. It can take many forms—public offerings of shares, or private trade sales of assets themselves.
- *Greenfield projects*: this covers brand new investment projects which are commissioned to the private sector (Build-Operate and Transfer are among the most common). The development of new project finance techniques, as a way of reducing, or at least better allocating, the risks involved in financing new infrastructure projects, is one of the reasons why greenfield projects have been so successful. This is also why the specific design of unbundling the sector is so important that sometimes it must be tailored to the marketability of an activity from a project finance perspective to manage the risks
- *Operations and Maintenance (O&M) contracts*: these are essentially contracts to allow a private operator to manage (i.e. operate and maintain) the service but do not include investment obligations. These contracts are typically of short to medium duration (2-5 years) and generally the government continues to take on all risk involved in the project.
- *Concession contracts (or franchises)*: these are usually longer term contracts of 10-30 years, which pass on the responsibility for O&M to a private operator and include detailed lists of

¹⁴ For more details see Shaw, Gwilliam and Thompson (1996), or Gwilliam (1998) and the World Bank Transport Division Web site.

investment and service obligations. In this case, the government generally passes on the commercial risks to the private operator. For many governments it also has the advantage that it does not imply a politically sensitive transfer of ownership of public assets to the private sector; assets are “rented” out.

In developed countries, asset sales (most obvious in Australia and continental Northern Europe) and concessions/franchises (in the U.K., Southern Europe and Canada) have been sharing most of the business in transport. The relative importance of BOTs (Build-Operate and Transfer) types of projects is likely to increase as a result of the Blair administration’s Private Finance Initiative¹⁵. In the Anglo-Saxon world and in Germany suggests that even local governments are interested in this form of infrastructure financing. Urban roads in the U.K. and Australia are increasingly being marketed for what the U.K. calls public-private partnerships—essentially, design-build-finance and operate deals. Under these deals, private sector contractors take a large share of the risks that would otherwise be have to be assumed fully by the government, and therefore face strong incentive to effectively interact with the local tax-payers.

In developing and transition economies, concessions are the most common form of private sector participation in transport. Table 3 illustrates this for developing countries in general. The table also shows that while Latin America and East Asia are the most active in promoting concessions, greenfield projects have been quite successful in East Asia over the last fifteen years or so. This trend has been hit by the recent Asian financial crisis, which has essentially frozen most project finance activities in the developing world, resulting in the reallocation of financing flows to developed countries. For example, Canada recently closed one of the most creative toll road

designs, and countries like Australia and Portugal, who have strong political commitments to increased private sector participation are riding a wave of BOTs and concessions in transport.

Table 3: Types of Private Sector Involvement Across Contract Types in Transport
In Developing and Transition economies
(Number of projects per contract type between 1990 and 1997)

	AFRICA	EAST ASIA	EASTERN EUROPE	LATIN AMERICA	MIDDLE EAST	SOUTH ASIA	TOTAL
Divestiture	0	8	5	6	0	0	19
Greenfield Projects	1	49	1	8	2	6	67
O&M Projects	10	10	1	12	2	0	35
Concession Contracts	3	83	4	140	1	8	239
TOTAL	14	150	11	166	5	14	360

Source: World Bank PPI database

The Middle East has been the least effective (or maybe the least interested) at building a partnership with the private sector in transport, although there was some activity in private ports, as well as the recent concession of the Aqaba railway in Jordan. South Asia and Africa come next—including the successful bi-national railway concession between Abidjan and Ouagadougou. Part of the problem is that in these regions most types of risks levels, not only political and regulatory, but also commercial, are high. The ability to pay for transport services in many countries of this region is very modest, implying that tariffs for most passenger services, for instance, have to be quite low. This, in turn, implies rather long-run commitments in order to recover investments. But there seems to be a strong hope for change in both regions. Recent projects in Cote d'Ivoire may provide a glimpse of things to come: the airport was concessioned, a major toll road is now in the hands of a private (construction) company and the port is about to be concessioned as well.¹⁶ Stories like this can be told for at least a dozen African countries, indicating that the market seems to have found ways to mitigate the risk and is now convinced that it can deal

¹⁵ The PFI began with three types of contracts: concessions, joint ventures and public sector sole buyer of service (even if the contractor is sometimes allowed to generate third party income from assets). The last form is the most innovative, as it generates the most for taxpayers in terms of value for money. For details, see Wilson (1999).

¹⁶ The decline of "real equity" in road projects, i.e. the increasingly strong presence of construction companies, is seen by many as a fact of life because it is quite rare to get interests from pure financial investors to face the risks characterizing toll roads.

with the political and regulatory risk that is often believed to be much higher in Africa than anywhere else in the world.

Table 4 shows that from a sectoral perspective, concession contracts have overwhelmingly been the preferred form of privatization for all sectors except ports. In ports, which happens to be the sector with the highest share of O&M projects, contracts are slightly dominated by greenfield projects. Much of the other data is somewhat surprising. The airport industry, although generally viewed as a relatively low risk industry characterized by good long term growth prospects, has not yet delivered on its promises in terms of private sector participation. Better yet, traffic growth has been strong, and most experts agree that it is expected to continue to be strong for the foreseeable future. One explanation may be that the military has had a strong say—and often a good financial cut—in this sector and therefore tends to be reluctant to relinquish this profit. Also, the modest performance of ports in attracting private sector interest reflects the strong role of unions in this sector. Initially, many are not interested in giving up the rents that their control of the sector often yields. In Brazil, where unions have traditionally been quite strong, in the ports sector, the unions are now working with logistics companies to develop win-win reforms to create business that can rehire excess labor from the more traditional port activities.

Table 4: Types of Private Sector Involvement in Transport Across Regions in Developing and Transition Economies (Number of projects per contract type between 1990 and 1997)					
	Airport	Port	Rail	Roads	TOTAL
Divestiture	2	6	4	7	19
Greenfield	5	32	6	24	67
O&M Projects	3	21	4	7	35
Concessions	15	31	23	170	239
TOTAL	25	90	37	208	360

Source: World Bank PPI database

Overall, a recent development is that divestiture is generally picking up in transport as a result of increased activity in the airport sector. Even in Asia where the financial crisis hit hardest,

the growth in airport projects is quite obvious. Malaysia, Thailand, Korea, even Japan have all plans for new airports. Many airport deals in developed countries are being offered as divestitures rather than concessions, a trend that may spread to developing . A complementary change in the sector is the growth in efforts to obtain private financing of relatively small projects (cargo facilities, catering facilities, ...) to complement the public financing of the core structures. All this makes up for strong interest in small project financing as well. One indicator of this trend is that many investment banks are reorganizing their airport advisory units to support more divestiture in addition to project finance activities. Another trend being set by the airport sector is that current operators, such as Schiphol in the Netherlands, Frankfurt, Rome, Toronto and London, are present in most bids in developing countries. Most U.S. and U.K. rail or ports operators are present in the key rail bids as well. In the roads sector, it is difficult to find an example where the main local construction companies are not involved. This suggests some degree of continuity within the roads sector, since in many countries these local companies were contracted by public works departments to build, operate and maintain many of the roads before they were concessioned. On the other hand, this may also raise concern since it could also indicate collusion between the government and a private sector partner.

5. How competition enters transport infrastructures

Historically, the economic and political reasons for public interest in transport (scale economies, externalities, national security) led most countries to public enterprises or to ministerial control. The U.S. was the only country where the choice had been to rely on regulated private provision. Since the academic debate on the potential gains from sectoral reform started in the U.S., the initial debates began with a discussion of the need to introduce more competition *in* the

market. In the U.S., this was done by eliminating restrictions to entry (such as entry licenses) and restrictions on operating rights, in addition to eliminating strict price and quality controls. The motives for liberalizing the sector appeared to be quite obvious, not only to most economists but also to casual observers. This is because in the U.S., the static and dynamic efficiency gains expected from increased competition—i.e. lower costs, fewer price-driven distortions, better user service orientation, demand-driven investment strategies—had been, and continue to be, well publicized among the public at large through extensive media coverage by the reforming government. But the experience of the U.S. may be an outlying one, and therefore less relevant than more recent experiences since privatization was not an issue the reformers had to deal with. Indeed, in the rest of the world, the initial conditions were that all transport infrastructures tended to be run by strong public monopolies. In that sense, the U.K. and Chilean reform experiences are more representative of what is now happening around the world.¹⁷ What was most relevant in the U.K. and Chile, from the viewpoint of the followers, was that these two experiences made it clear that for countries with the most standard initial conditions of the transport sector—i.e. strong public monopolies unable to invest because of fiscal rationing—, there could be no liberalization without considering some type of restructuring in the sector.

This is why the first question any reformer aiming at increased competition in transport should look into is the extent to which a restructuring of the sector is needed and/or is possible to make the most of the opportunities offered by a reasonable degree of competition in the sector. In practice, restructuring generally implies some degree of unbundling of the activities performed in each sub-sector. This is much more than a simple accounting separation which maintains a monopoly in place. It consist in an actual disintegration of the monopoly into various business

¹⁷ In addition, their experiences with privatization also show that there is more to reform in the transport sector than just efficiency.

units. The restructuring can be horizontal so that the effectiveness of various companies delivering similar activities can be compared. This is common in railways, ports and airports. Unbundling can also be vertical and determine the extent to which a single firm can participate in different vertically related stages of production. Vertical unbundling is often handy in efforts to try to mitigate risks since often risks levels for potential investors are different at the various stages of production. For instance, the risks involved in investing in an airport terminal are often less than the risks involved in investing in a new runway. These two investments have a clear degree of complementarity by have different degree of attractiveness to private investors.¹⁸

When unbundling leads to competitive business units in overlapping segments of the business (as may be the case for bus services), competition in the market is a natural outcome which minimizes the residual role for government.¹⁹ But when *competition in the market* is limited –i.e that the scope for horizontal unbundling is limited-- and when the market structure still includes a local monopoly after the unbundling has been implemented, *competition for the market* through auctions can be designed to achieve many—but seldom all—of the gains from competition. The management of these auctions is quite complex and demanding and the outcome requires a strong government presence to ensure that the commitments made by the winners of the auctions are met and that the gains from competition for the market are real rather than potential. .

Indeed, many would argue that the U.K. and Chilean reforms were also a more philosophical change of heart on the role and capacity of the government in providing public services.

¹⁸ In addition, unbundling can have political advantages. It can indeed also be a way of getting rid of vested interest and introducing a new governance structure for the sector, which reinforces the purely competitive and commercial incentives for restructuring.

¹⁹ Checking for safety, environmental concerns and predatory behavior determine the bulk of the activities the government must focus on.

5.1 Experiences in forms of unbundling to make the most of competition

Since the diversity of experiences shows that it is possible to slice the transport pie in many ways, it is useful to understand why different governments use different methods to unbundle the sector. Indeed, the international experience suggests that the type and degree of competition achieved by unbundling depends not only on the classical trade-off between internal and external efficiency,²⁰ but also on the risk level perceived by the potential private operators since, after all, attracting them to finance what the government can no longer afford to finance is the name of the game.²¹ When economies of scale are not too strong with respect to the size of the market, unbundling can reduce the aggregate commercial risk level perceived by private investors. *Competition for the market* in each activity can be expected to be sufficient to promote overall efficiency. Unbundling stops at the level of activity which requires some type of material infrastructure (rail tracks, roads) that would make no sense to duplicate in a competitive environment. Moreover, too much unbundling can hurt, as it reduces the opportunity for risk hedging across activities in highly risky situations, or it reduces the opportunity to optimize economies of scale and scope. This may be why in many smaller economies—and there are many in Africa and Central America— much less unbundling has taken place than in the Latin American Southern Cone and East Asia.

The creativity of the reformers is best seen in an overview of the various sectoral experiences.²² In railways, the service can be unbundled vertically, separating track from rolling stock, as was done in the U.K. It can also be separated horizontally (regional lines) as in the U.S., Mexico and Argentina. This allows the organization of *competition for the market* while bidding out

²⁰ Internal efficiency refers to the relative choice of inputs by firms, while external efficiency refers to their sale and pricing policies.

²¹ All project managers assess the cost of capital, which reflects various types of risk: commercial (including the risk of not being paid by users who were used to highly subsidized rates under the public monopoly), regulatory risk (what happens if the regulator has mood swings?) and political risk (what happens if the government changes?).

the rights to deliver the services and also providing an opportunity to rely on *competition between markets*. No country, outside the U.S. to a lesser extent, Australia, has actually made a serious effort to compare regional operators in terms of efficiency in this sector. Finally, to minimize the risks of cross-subsidies that distort investment decisions, some countries have also separated freight and passenger rail as in Brazil and Argentina.

Similar strategies are observed in roads, where horizontal separation allows the promotion of *competition between markets* to complement the effects of *competition for the markets*, which is built into the design of auctions. This horizontal separation into corridors has been quite common in Latin America. In Latin America and also in Asia, some degree of vertical separation has been observed when, for large cities, access roads to inter-urban roads are auctioned separately. A lesser-known trend in the road sector is the increase in operations and management contracts auctioned out to the private sector as a way to minimize the cost of road maintenance. Even if this does not finance the roads, it avoids demanding investments in equipment and allows some degree of competition in the sector. This is now quite common in Latin America and is picking up in the other parts of the world. . Unbundling in regional units of business also allows the introduction of *competition between markets* by comparing the performance of the same types of service in the various regions.

For ports, the promotion of interregional competition across ports (as in Brazil and Chile) or intra-port competition between terminals (as in Argentina, and to a lesser extent, Brazil) allows the performance of the winners in the various segments of the sector to be compared over time, continuing the competitive pressure. In some countries, vertical separation between infrastructure and port services has been seen as the most desirable solution (as in Sri Lanka and Peru).

Finally, for airports, horizontal separation across regions (as in Mexico) or vertical unbundling of air traffic control, terminals, runways and passenger and commercial services has been

²² For details, see Campos and Cantos (1999), Nombela and Trujillo (1999), Betancour and Rendeiro (1999), Thompson and Budin

adopted (as in Canada and Colombia). This shows that airports do not have to be treated as single, monolithic monopolies. It is also clear that interregional competition does work, as operators are very aware of the potential competition from other operators in their region.

5.2 How governments show that there is more to reform than competition²³

Governments have multiple agendas: efficiency concerns and fiscal concerns (including short-term vs. long-term). The relative importance of each item has a strong influence on the type of restructuring that is adopted.²⁴ Argentina's experiences the first wholesale reform of the transport sector in the 1990s, is quite revealing. Looking back, it seems that its major restructuring of transport, initiated in 1991 as part of a wider privatization and deregulation strategy, provided the leading indicator of transport sector reforms to come in developing countries. In particular, it showcases the complex interactions between the way competition is introduced in transport to achieve efficiency gains and at the same time address the macroeconomic objectives of government reform. The most important of these macroeconomic objectives are fiscal concerns--including driving down the cost of subsidies to a sector traditionally funded by public financing. The outcome is that gains in efficiency have been achieved but the sector continues to be heavily subsidized (although much less so than before the reforms). After difficult renegotiations, many of the rail and roads operators ended up with longer term contracts than anyone initially thought was necessary to minimize the subsidy requirements.²⁵

(1998), Thompson (1997) and Juhel (1998); for the U.K. experience, see Glaister (1998).

²³ For a longer, illustrated discussion for Argentina, see Crampes and Estache (1998).

²⁴ Often, this is driven by whoever is in charge of reform in the sector. If the restructuring is in the hands of the Finance Ministry, chances are that the fiscal concerns will dominate. If it is in the hands of the Transport Ministry, productive (cut costs) or dynamic (increase investment) efficiency concerns will dominate.

²⁵ Many EEC countries concerned with the need to meet the Maastricht fiscal targets are in a similar situation. As they are finally considering an increase in the role of the private sector to finance their much needed infrastructures, they are going through many of the same dilemmas that Argentina went through at the beginning of the decade: how can transport liberalization be implemented to also address pressing fiscal constraints?

Understanding the dilemmas faced by governments requires an understanding of the ways that fiscal concerns can be addressed. Fiscal gains can be achieved in three major ways: (i) sale or rental of assets; (ii) passing on the financing costs of operating and investing to the private operators (in many ways this means that the burden is shifted from the taxpayers to the user of the service, which is quite important since many services tended to be under-priced or subsidized under public operations);²⁶ and (iii) subject the private operators to the standard tax demands, rather than formally or informally exempting them, as is often the case for public enterprises. The first method is the main focus of most reforming governments with serious fiscal constraints.²⁷ In some cases, governments have recognized that it is also fiscally profitable to privatize services that demand huge amounts of subsidies at high delivery costs, as private operators can often cut these costs quite quickly. Even when subsidies are needed, they can be obtained at a lower fiscal cost. This is the case for many railway services from the U.K. to Argentina.

Private investors may be tempted to play games that are not necessarily in the interest of consumers. The government may end up playing along because of its desire to achieve fiscal gains through the sale or rental of assets. This automatically creates a trade-off for the government. Indeed, the higher the retained degree of monopoly passed on by the government, the higher the willingness of private operators to pay for the right to run a service. This means that the initial desire to fully liberalize to achieve efficiency gains may be reduced by the need to meet pressing fiscal needs. The evidence is quite strong in the telecommunications sector, where temporary exclusivity periods are quite common, guaranteeing the government high fiscal payoffs financed by the rent captured by private monopolies from their clients. The rent is typically not as high in

²⁶ Clearly, the contingent public liabilities that underlies many of these privatization efforts are serious threats to the fiscal pay-offs of privatization and cannot be ignored in any reasonable assessment since they are often potentially at least as high as the original subsidies the governments are trying to get rid of.

transport, where modal competition maintains pressure on the rent, therefore reducing the willingness of clients to pay excessively high prices for former public services. But for some airports, and for ports with little competition in some market segments, this is an issue.

In fact, the recent experience of the airport sector points to another way in which restructuring and fiscal concerns interact. In many medium to large countries, airports often benefit from cross-subsidies financed through international traffic or through high-demand, domestic airports. When considering the restructuring of the sector, the privatization teams often make the recommendation to maintain the cross-subsidies and to sell or concession airport packages, rather than individual airports, to minimize the need for the government to have to finance the airports with losses, even if it is through explicit subsidies. This debate is taking place throughout Latin America, from Argentina to Mexico.

The incentive to condone, even temporarily, some degree of restriction to competition is in fact quite common. Indeed, railways, ports or airports with strong, captive client base or with shared traffic can be used by the government to achieve high fiscal gains. This is why access pricing is one of the key issues—and great business for consultants—in this sector. Unless access pricing rules are defined before the business is passed on to private operators, it is clear that rents are being created that are harmful to users. This has long been an issue in the U.S.; it is an issue in the U.K., and it has proven to be an issue in most developing and transition economies. It is particularly so in most developing countries because the need to transfer the business to private operators is often so pressing that there is little time to work out the demanding details of access pricing.

27 Moreover, politically, it is always difficult to go to the media and the public and argue that the government did not do its best to make the most of the “sale” of assets used to deliver services viewed by many in the population as entitlements.

5.3 *The impact of ranking government goals for the design of the competition for the market*

The multiplicity of objectives also explains the multiplicity of award criteria for contracts—whatever their type—observed when governments organize *competition for the market*. The governments who are most obviously concerned for the users, and who want to increase the transparency of the reduction that is obtained through privatization, will generally opt for awarding the concessions to the bidder with the lowest tariff. This is quite common for toll roads or ports. On the other hand, governments with some political concern will set the tariffs and investment obligations and award the contract to the bidder offering to run the business for the shortest duration. This was the case for some toll roads in Mexico. An alternative is to award the concession to the bidder asking for the shortest time to recover the demanded investment, as is the case for toll roads in Chile.

When fiscal concerns dominate, the award can be organized to go to the bidder willing to pay the most to the government for the right to provide the service, as in Argentina's ports. In some cases, when demand for the service is not strong enough (such as low-traffic roads), obtaining the best fiscal impact may also mean picking the bidder that asks for the smallest subsidy, as with roads in Peru, for instance. This shows that the international experience is not leading to a convergence in the criteria used to pick the winners in competitive bidding because the weights attached by governments to their multiple goals can vary across countries and across sectors and within countries and sectors. These weights can vary over time as political concerns change.

6. What the new role of government in privatized transport looks like²⁸

To some extent, the “privatization” transaction was the easy part of getting the private sector involved in co-financing the needs of the sector. It raises many questions that have to be tackled by the reform teams: the forms of competition, the type of unbundling and the ranking of government objectives. It also raises questions of sequencing, which economists tend to enjoy debating, but for which pragmatic reformers have a simple answer: take the path of least resistance, make as few mistakes as possible and get the deal done. The main problem with this is that it leaves many challenges for the government that could in fact make or break future deals. In practice, this influences the cost of capital as the resolution influences the risk premiums paid on the next generation of projects. This is why the most difficult challenge for governments is to prepare to enforce the commitments made through the privatization transactions. This means that after privatization, the Transport Ministries and Secretaries have to resist the temptation to create a shadow management of the activities they used to run.

6.1 Defining the role of economic regulation

Once the contracts have been signed and sealed, giving the private sector the responsibility for (co-)financing and delivering the services, the government needs to prepare to intervene only to ensure that competition works, as well as to check on safety and environmental concerns, but not as the manager of the business. If the government does not have the capacity to enforce economic—and no longer technical—regulation of the sector, it must develop the ability to make decisions where the resulting behaviors of all parties mimic the impact that competition would have had in the sector if it had been possible. The agenda for the economic regulation is clear. Government intervention will be needed if:

²⁸ It is clear that the government will continue to have an important role since only the activities with sufficient demand will probably

- there are high legal barriers inherited from past regulatory regimes that need to be sorted out—and this is more common and more troublesome than usually anticipated--,²⁹
- the privatized services are natural monopolies, which come with such risks as abusive pricing, abusive control of bottlenecks that hurt captive shippers and other investment related issues-- and access pricing is high on the list of related concerns;
- predatory pricing takes place, or
- safety cutbacks are likely to be an easy way to reduce costs.

If an effective competition or anti-trust agency is in place, it will take care of the first three responsibilities.³⁰ If not, these are to be included in the mandate of the economic regulators. This is not the only responsibility of these regulators. In addition, the government needs to monitor compliance and enforce the contractual commitments—investment, quality and service obligations—of the private operators.

6.2. Picking the regulatory regime to address the risk concerns of the investors

Traditionally, governments have relied on rate of return regulation. In other words, governments have generally guaranteed to operators that they would recover their costs (within very general, often generous, guidelines) and get a markup to remunerate investors— thus the label “cost-plus regime”. Since these regimes do not give a strong incentive to operators to cut costs, they are called low-powered regimes. The introduction in the U.K. of price caps changed all this by showing that the regulatory regime could be designed to minimize costs. Price caps allowed the operators to keep the cost saving they were bringing to the sector for a limited period. After three to five years,

be able to attract significant private sector interest. It is interesting to note that increasingly, activities such as low traffic and rural roads maintenance are being contracted out through auctions to private companies as well.

²⁹ For details on the relevance and importance of this issue, see Kennedy (1997), Laffont and Tirole (1998) and Valletti and Estache (1999).

these would have to be shared with the other agents (users, and sometimes governments). The high incentive to cut costs for the initial period makes this a high-powered regime. In many countries, hybrid systems are approached, which result in some degree of immediate rent sharing at the beginning of the period of private sector operations. These regimes are becoming increasingly common. Table 5 provides a snapshot of the regulatory regimes and industry structure for a sample of countries and sectors around the world.

Table 5: Examples of Regulatory Regimes in Transport

High-powered	Airports (U.K., Australia), Buses (Singapore), Railways (U.K., Brazil), Roads (Australia), Ports (Argentina), Others (U.K.).
Medium-powered	Airports (Italy, Denmark, Austria), Buses (U.K. - London, Australia – Sydney), Railways (Australia), Roads (Italy).
Low-powered	Buses (Hong Kong), Railways (Argentina, USA, Japan), Tunnels (Hong Kong).

Source: Alexander et al. (1999)

An often-omitted feature of the regulatory regime is that it also drives the distribution of risks in the business. Low-powered regimes are also low risk regimes since cost recovery is almost guaranteed, whatever the demand. Pure high-powered regimes, on the other hand, shift all the risks onto the shoulders of the private operators. This matters to the extent that it influences the total risk level faced by potential investors. In situations where initial risk is very high, this can make or break a deal. In practice of course, things are not always that clear cut. Regulators under cost-plus regimes can disallow expenses they consider to be unnecessary, excessive or inappropriate. The problem is of course that this can give rise to some degree of arbitrariness in the decisions. On the other hand, if there is enough control of costs as in simplistic price caps, the operators tend to have strong incentives to cut quality or safety. Moreover, the measurement of the efficiency gain to be shared with users after an initial period can generate serious political conflicts, as was the case in the UK.

³⁰ A useful reminder by Kahn (1998) is that government and competition agencies must resist the temptation of “creating” artificial competition in order to try to showcase quick rate reductions through implicit or explicit subsidies to

Table 6 reports the results of a recent study on the impact of the choice of regime on the perceived risk as measured through the “assets beta” of 48 private transport projects around the world. This table first shows that on average, risk levels are not too high in the transport sector. In the sample analyzed, the bus sector tends to be the most risky, mostly because of a series of sour deals in Asia. The table also shows that, in general, the relationship suggested by the theory is confirmed: high-powered regimes induce higher risks. However for some industries, the exposure to inter-modal competition or other factors leads to a breakdown in the relationship. Rail is a good example of this: the regulation and market risk relationship holds for the U.K. and Japan, but does not hold for U.S. companies. However, the use of averaging in the summary table masks this result to some extent..

Table 6: Summary of Asset Betas by Sector and Regulatory Regime						
Regulatory regime	Airports	Buses	Rail	Roads	Other	All
Price Caps	0.69	1.04	0.52	0.31	0.24	0.44
Intermediate regime	0.56			0.15		0.46
Cost +		0.52	0.35		0.80	0.40
Total	0.61	0.69	0.36	0.25	0.45	0.42
<i>Sample size</i>	(5)	(3)	(29)	(3)	(8)	(48)

Source: Alexander et al. (1999)

5.3 Developing the institutional capacity to regulate

The introduction of more sophisticated regulatory regimes has also made it clear that there is a need to develop a major regulatory capacity within countries. In practice, the development of the regulatory capacity faces two main risks. The first risk is having the regulators controlled by the operators, and being lenient in the case of conflict. The second is having the regulator controlled by the users or customers, and imposing demands not covered by the contract. There is also the risk that the government does not deliver on its own contractual commitments, which increases the perception of risks of expropriation. Sometimes, subsidies are part of the commitments (usually implicitly, since

the new entrants. See Chapter II in particular.

risk assignment is typically built-into the design of the regulatory regime). For instance, when reviewing tariffs, decisions are needed on issues such as cost allocation or the calculation of the cost of capital. These issues clearly influence the allocation of risk, profit and rents between the operators, investors, users and the government. Of course, this raises the appearance of conflicts of interest.

Being able to deliver on government commitments is a challenging task, as experience shows. Since contracts and all of the other supporting regulatory legal instruments are often incomplete, the government must be able to demonstrate fairness in settling issues and disputes for which the contracts provide no guidance. While no one doubts that governments can often be fair, it is useful when restructuring the sector to also restructure its institutions in ways that include a commitment device that guarantees such fairness. The most common commitment device is the creation of an independent regulatory authority, free from the risk of control by politicians, the government, the operators or the users of the service. Clearly, this authority must not only be financially autonomous but also accountable for its decisions.³¹

This is where the reforms still have a way to go in most countries. The oldest experience of an independent, integrated regulation of the transport sector is through the Surface Transport Board. Its principal quality is that it operates in a relatively transparent and accountable environment where all interested parties have an opportunity to present their views at all levels — before Congress, before the agencies and before the courts. The process of judicial review generally ensures that the agency applies the regulatory law as intended by Congress, and that the agency engages in decision-making based on evidence. The main weakness of the system is that it imposes very high compliance costs. This has proven to be very difficult to change in this sector, particularly where there is a significant interest in the status quo.

³¹ For details, see Broadley, J. and A. Estache (1998).

The sad fact is that there is no good news to report on new international experiences. While regulatory processes in the U.K. have much that deserve emulation, the experience in institutional design for regulation is probably not a model to follow. It has more regulatory agencies than it has transport sectors to regulate. They are, in fact, in the process of merging some of the agencies as a way to ease the coordination of regulatory decisions. In most countries, the solution has been to create units within the Ministry of Transport that monitor concessions or other contracts with private operators. The main disadvantage is that in the case of disagreement with the government, conflicts of interest emerge quite quickly. Various experiences in Latin America suggest that the lack of transparency in the decision-making of these monitoring units often creates tension which is well-reported by the press. This then becomes a source of political debate about the privatization process, which is based on few facts and many rumors, as is illustrated by the Argentinean and Mexico experience with toll roads.

To minimize these risks of excessive “politicization” of regulatory issues, a new generation of transport agencies is being introduced, inspired by the integrated U.S. model and led by Bolivia and Peru. Both countries have regulatory agencies that are much more independent from policy-makers. The agencies cover all sectors and have their own sources of funding. They also rely on this funding to sub-contract activities for which skills are required that they don’t have in-house. In addition, Peru has built in an interesting twist. To ensure good coordination between the competing agency and the transport regulator, one of the members of the Transport Regulation Board is also a member of the Competition Commission. While very promising, and clearly an improvement over previous arrangements, the experience with these models is still too young to lead to any conclusion. The challenge remains, however, and continues to be the biggest source of long-run risk. An incompetent or controlled regulator is the best indicator that the outcome of privatization will be unfair. In

previous experiences, unfairness tends to favor the investors and operators, rather than the users, when contracts are poorly designed and conflicts arise.

6.4 Developing the tools of regulation

This brings up a second aspect of institution building that is needed for fair and effective regulation. The experience of the first generation of privatization around the world suggests that a good regulator *without* good tools is also a source of conflict and unfairness. For all practical purposes, the main instrument of a regulator is the contract signed with the private operator. The tough question now is to decide how much discretion to give to the regulators.³² The larger the degree of discretion desired, the less detailed the contract will have to be, as the regulatory decisions will be based on laws or decrees that have to be interpreted by the regulators. The smaller the degree of discretion desired, the more detailed the contract will have to be, thus increasing the relative importance of contracts in the design of the regulatory environment. Since all events cannot be foreseen—meaning the contract is in fact incomplete—there will always be a residual degree of discretion. This means that the government will have to have a strong technical capacity to make the right and fair decisions.

The experience has generally been that weak regulators have been given too much discretion without guidance to take the decisions on matters left out of the contracts. In developing countries, the combination of weak regulators and poor contracts has resulted in an extremely large percentage of contracts being renegotiated. The losers in these renegotiations have usually been the taxpayers, as governments often end up picking up the tab for the financial consequences of renegotiations, as was the case in Argentina.

³² For a detailed discussion, see Gomez-Ibanez (1999).

The increasingly adopted solution is to work with rule-based contracts since they tend to make regulation easier when there is overwhelming uncertainty. The challenge is to pick rules that are fair and have minimal information requirements. This is one of the advantages of price cap regulation. In addition to its incentives, it has the tremendous advantage of having very light information requirements, at least at the time of its introduction. Five years down the road, when caps have to be revised, the information load is similar to rate of return regulation. Rules make it easier for arbitration, when necessary, to be efficient. But here again, the concern is with the fairness of local arbitrators. It turns out that over the last two years most infrastructure contracts identify one of the international arbitration agencies as the appeal agency in case of conflict.

However, these contracts are not sufficient in many cases . Without going into detail, regulators need to build up capacity in other areas, across country types. A common failure of privatization experiences in all country types is the failure to assess demand well enough. The two most common reasons for private operators to ask for a revision of their contracts are that there are cost shocks and that demand has turned out to be completely different than expected. This is because the public enterprises who were running the services prior to privatization did not have much incentive to be concerned with demand.

A more cynical interpretation is that there are joint perverse incentives for both governments and operators. The government often wants to make business look better than it is because it wants the deal done. It takes the bet that problems, if they emerge, will have to be dealt with by the next government. The potential operators actually want to get into the business knowing that they stand a good chance to be able to go back to the government to negotiate better terms once they have started operations. At that time, the transaction costs (including the political costs) for the governments of canceling a contract without renegotiations are generally much higher than the costs of giving up some ground by accepting some of the demands made by the incumbent. Often the outcome is that

the government gives up too much in an effort to resolve the conflict quickly. This raises the stakes for demand by private operators for the following round of privatization or renegotiations, and possibly increases the incentive to renegotiate. While this may in fact cut the regulatory risk premium, as operators become convinced that they can do business with the government, it may also mean that users or taxpayers will end up paying the bills that result from renegotiations. Note that only playing hard ball does not work since it often results in operations being stopped and users not getting the service they want. Furthermore, it increases the regulatory risk premiums, as seen in recent conflicts in Argentina's water sector.

A final common problem is illustrated by a quick review of the recent major experiences in railway privatization. It suggests that one of the issues that few regulators can handle well and which cannot simply be covered by a contract is access pricing. This is one of the key themes facing Argentina, Brazil and Mexico. Similarly, in many countries, safety is an issue that contracts do not address well—a result of the risk of micro-management if too much is said about it. Most importantly, this is an issue for which the institutional assignment of responsibility is not clear. This may in fact be a symptom of another institutional problem. In addition to the multiplicity of agencies responsible for the economic regulation of transport, there are typically many other agencies involved in enforcing some type of non-economic regulation. Environmental regulation is the typical one, but there are also often local land use rules that can conflict with contractual obligations. The point is that few countries seem to be able to use the multiplicity of agencies to promote competition for effective regulation. This multiplicity instead results in coordination problems for which every agent blames the other. Finally, few countries have escaped some type of collusion problems, either actual or potential, between construction companies and the government, or among other potential members of consortia that are interested in taking over a transport infrastructure project.

7. Conclusions

It is clear that the private sector will not be the main source of financing for every mode. The roads sector, for instance, is likely to continue to require significant public funding. Even in roads, however, introducing innovative ways to attract private financing of maintenance and investment needs, such as through shadow tolls, increases the cost-effectiveness of the operation of the sector.³⁴ In fact, the experience of the 1990s suggests that private sector involvement in transport is doing quite a lot of good in financing transport infrastructure support services that have a high demand.³⁵ It clearly shows that reforming governments can be quite creative in tapping this potential, as illustrated by the variety of restructuring models and financing designs which have been put together across sectors and across countries.

Many would also argue the effectiveness of this public-private partnership, as transport infrastructures have tended to improve quite dramatically with the introduction of competitive practices in the sector. This suggests that it is difficult to be pessimistic about the long-term prospects for opportunities for increased private participation in transport, in particular in airports and ports, where potential for private sector participation, and financing in particular, continues to be untapped. Traditionally this has not been easy, nor will it be in the future.

This sector could be better at attracting competitive private capital if governments improve their regulatory tools and sort out the institutional mess surrounding the regulatory process, which may be the biggest bug that reformers have not been able to get rid of!. Knowing the cost of capital, knowing how to be fair to captive shippers, and having a better handle on demand will provide

³³ Consider also that any real economic effects from these financial events have particular consequences for the transport sector. Since transport is a derived demand, any decline in real economic activity will quickly be felt in traffic levels and revenues. These effects vary by sector, especially over the medium to longer term. Particularly hard-hit should be toll roads and passenger air transport, which are extremely sensitive to income levels. This further reinforces the need to think of government involvement in the sector.

³⁴ Shadow tolls have not yet convinced many experts in the sector, but the idea continues to stimulate innovative approaches to funding the sector.

regulators with more credibility when conflicts arise. Governments have focused too much on getting deals done, and have generally underestimated the difficulty of taking on their new job as regulators. While they are increasingly switching to contract-based regulation to firm up the commitments of all parties involved, they are not putting enough emphasis on designing the contracts to anticipate conflicts and address unpredictable situations, which increases the risk of arbitrary regulatory ruling. This, in turn, has increased the regulatory and political risks, therefore raising the required expected rate of return for potential investors. This makes future projects more difficult and/or costlier and further adds to the effects of the 1998-99 financial crisis.

The result of increased risk is seen in a self-selection bias in the type of potential entrants into this sector. The two main groups interested are (i) the large, strong operators in the sector—typically in tandem with local construction companies—who feel confident that they will be able to take on the regulators in case of conflict, or (ii) the risk takers who need to carve their niche. Either way, the taxpayers and/or the users are the most exposed to government, regulatory or operator failures which result in contract renegotiations. These seem to be the norm rather than the exception in infrastructure projects.

All of this means is that there is a risk that the gains from privatization do not reach the people simply because the governments are ignoring the importance of their role to ensure the fair distribution of the long-run gains through the early creation of independent and accountable regulatory institutions that working closely with effective competition agencies. Learning to regulate fairly and effectively at arm's length may be the main challenge for governments in the next millennium. Those who are unwilling to learn the tricks of the trade will end up being the Y2K bugs of transport privatization, preventing users from making the most of additional investments brought by the private sector.

³⁵ For a more analytical treatment see Winston (1993).

Bibliography

Alexander, I., A. Estache and A. Oliveri (1999), "A Few Things Transport Regulators Need to Know About Risks", Working Paper Series, The World Bank

Betancor, O. and R. Rendeiro (1999), "Regulating Privatized Airports", World Bank working paper

Broadley, J. and A. Estache (1998), "Transport Regulation, Institutions and Processes", mimeo, The World Bank

Campos, J. and Cantos (1999), "Regulating Privatized Rail Transport", Policy Research Working Paper, No. 2064, The World Bank, Washington DC.

Crampes, C. and A. Estache (1998), "Regulatory Trade-offs in the Design of Concession Contracts", *Utilities Policy*, 7(1998): 1-13

Glaister, S. (1998), "Competition in Transport: the British Experience 1979-1997", mimeo, The World Bank Institute

Gomez-Ibanez (1999), "Commitment and Flexibility: Strategies for Regulating Privatized Infrastructure", Discussion Paper, Harvard University, JFK School of Government, Taubman Center for State and Local Government, January

Gomez-Ibanez, J.A. and J.R. Meyer (1993), Going Private: The International Experience with Transport Privatization, The Brookings Institution, Washington, D.C.

Gwilliam, K. (1998), "Concession and Franchise Contract Design in Transport", mimeo, The World Bank Institute

Juhel (1998), "Government Regulation of Port Activities: What Balance Between Public and Private Ports", mimeo, The World Bank

Kahn, A. (1998), Letting Go: Deregulating the Process of Deregulation, The Institute of Public Utilities and Network Industries

Kennedy, D. (1997), "Regulating Access of the Railways Network", *Utilities Policy*, 6(1): 57-65

Laffont, J.J. and J. Tirole (1998), "Network Competition: I Overview and Nondiscriminatory Pricing; II, Discriminatory Pricing", *Rand Journal of Economics*, 29: 1-56

Nombela, G. and L. Trujillo (1999), "Regulating Privatized Ports", World Bank Working Paper (forthcoming)

Public Work Financing (1998), "1998 International Major Projects Survey", October, PWF International

Shaw, N.L., K. Gwilliam and L. Thompson (1996), Concessions in Transport, TWU Discussion Paper 27, The World Bank

Thompson (199?), viewpoints for FPSI

Thompson, L and K.-J. Budin (1998), "Railway Concessions: Progress to Date", *Rail International*, January/February: pp.60-73

Valletti, T. and A. Estache (1999), "The Theory of Access Pricing: an Overview for Infrastructure Regulators", World Bank Working Paper No. 2097 and CEPR Discussion Paper No. 2133

Wilson, T. (1999), "The Private Finance Initiative", *Infrastructure Journal*, Winter: pp.35-43

Winston, C. (1993), "Economic Deregulation: Days of Reckoning for Microeconomists", *Journal of Economic Literature*, 31: pp.1263-89

The World Bank (1999), Private Sector Participation in Infrastructure Database

Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS2227	The Sri Lankan Unemployment Problem Revisited	Martin Rama	November 1999	S. Fallon 38009
WPS2228	Fiscal Contingency Planning for Banking Crises	Patrick Honohan	November 1999	A. Yaptenco 38526
WPS2229	Do School Facilities Matter? The Case of the Peruvian Social Fund (FONCODES)	Christina Paxson Norbert Schady	November 1999	N. Schady 88247
WPS2230	Bankruptcy Organization through Markets: Auction-Based Creditor Ordering by Reducing Debts (ACCORD)	David Hausch S. Ramachandran	November 1999	L. Tsang 80516
WPS2231	What's Behind Mercosur's Common External Tariff	Marcelo Olarreaga Isidro Soloaga L. Alan Winters	November 1999	L. Tabada 35555
WPS2232	Market Access Advances and Retreats: The Uruguay Round and Beyond	J. Michael Finger Ludger Schuknecht	November 1999	L. Tabada 35555
WPS2233	User's Guide to an Early Warning System for Macroeconomic Vulnerability in Latin American Countries	Santiago Herrera Conrado Garcia	November 1999	C. Garcia 87969
WPS2234	The Green Revolution and the Productivity Paradox: Evidence from the Indian Punjab	Rinku Murgai	November 1999	M. Fernandez 33766
WPS2235	Beyond Capital Ideals: Restoring Banking Stability	Gerard Caprio Jr. Patrick Honohan	November 1999	A Yaptenco 38526
WPS2236	Valuing Water for Chinese Industries: A Marginal Productivity Assessment	Hua Wang Somik Lall	November 1999	R. Yazigi 37176
WPS2237	Reforming Tax Systems: The World Bank Record in the 1990s	Luca Barbone Arindam Das-Gupta Luc De Wulf Anna Hansson	November 1999	L. Barbone 32556
WPS2238	A Review of the Role and Impact of Export Processing Zones	Dorsati Madani	November 1999	L. Tabada 36896
WPS2239	The EU Factor in the Trade Policies of Central European Countries	Bartlomiej Kaminski	November 1999	L. Tabada 36896

Policy Research Working Paper Series

	Title	Author	Date	Contact for paper
WPS2240	The Effects of Land Registration on Financial Development and Economic Growth: A Theoretical and Conceptual Framework	Frank F. K. Byamugisha	November 1999	E. Gelos 37846
WPS2241	How Land Registration Affects Financial Development and Economic Growth in Thailand	Frank F. K. Byamugisha	November 1999	E. Gelos 37846
WPS2242	Confronting Competition: Investment Response and Constraints in Uganda	Ritva Reinikka Jakob Svensson	November 1999	H. Sladovich 37698
WPS2243	Designing Pro-Poor Water and Sewer Concessions: Early Lessons from Bolivia	Kristin Komives	November 1999	M. Salehi 37157
WPS2244	True World Income Distribution, 1988 and 1993: First Calculations, Based on Household Surveys Alone	Branko Milanovic	November 1999	P. Sader 33902
WPS2245	Opportunities for Improving Environmental Compliance in Mexico	Susmita Dasgupta	November 1999	Y. D'Souza 31449
WPS2246	Infrastructure's Contribution to Aggregate Output	David Canning	November 1999	H. Sladovich 37698
WPS2247	Does Deposit Insurance Increase Banking System Stability? An Empirical Investigation	Aslı Demirgüç-Kunt Enrica Detragiache	November 1999	K. Labrie 31001

12-7